1/2 HP Deep Well Jet Pump

User Manual

Please read and understand all instructions before use.
Retain this manual for future reference.

1/2 HP Deep Well Jet Pump

SPECIFICATIONS

Power	120V / 60Hz
HP	1/2 HP
Max flow rate	13.5 GPM
Max. Head	66 PSI
Power cable	3C*SJTW 16 AWG*1.6m
Max. water temperature	35° C

IMPORTANT SAFETY PRECAUTIONS

WARNING! Read and understand all instructions before using this tool. Failure to follow all instructions may result in electric shock, fire and/or personal injury. Keep this manual for the safety warnings and precautions, operating, inspection and maintenance instructions. When using this tool, basic precautions should always be followed to reduce the risk of personal injury and/or damage to the equipment. Note that when this manual refers to a part number, it refers to the parts list included.

SPECIFIC SAFETY PRECAUTIONS

WARNING! Hazardous voltage can shock, burn or cause death. Ground pump before connecting to power supply. Disconnect power before working on pump, motor or tank.

Wire motor for correct voltage. See “Electrical” section of this manual and motor nameplate.

- Ground motor before connecting to power supply.
- Meet National Electrical Code, and local codes for all wiring.
- Follow wiring instructions in this manual when connecting motor to power lines.

WARNING! Capacitor voltage may be hazardous. To discharge motor capacitor, hold insulated handle screwdriver BY THE HANDLE and short capacitor terminals together. Do not touch metal screwdriver blade or capacitor terminals. If in doubt, consult a qualified electrician.

CAUTION: Do not touch an operating motor. Modern motors are designed to operate at high temperatures. To avoid burns when servicing pump, allow it to cool for 20 minutes after shut-down before handling.

- Do not allow pump or any system component to freeze.
- Pump water only with this pump.
- Periodically inspect pump and system components.
- Wear safety glasses at all times when working on pumps.

WARNING – HAZARDOUS PRESSURE!
Pump body may explode if used as a booster pump unless relief valve capable of passing full pump flow at 75 psi is installed.

- Install pressure relief valve in discharge pipe.
- Release all pressure on system before working on any component.

INSTALLATION AND REPLACEMENT – ALL MODELS

INSTALLING THE PRESSURE GAUGE AND PRESSURE SWITCH IN THEN PUMP BODY

1.Remove the filling plug and thread pressure gauge into the position A. (see fig A)
2.Remove the filling plug and thread pressure switch into the position B. (see fig B)
3.Connect power supply wiring to pressure switch (see fig C)
(1) Remove the pressure switch cover.
(2) Attach power and ground wires to the pressure switch as indicated.
(3) Reinstall the cover.

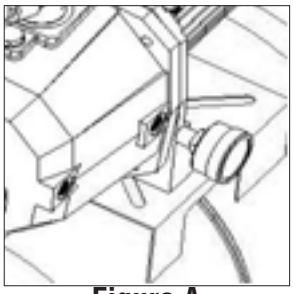


Figure A

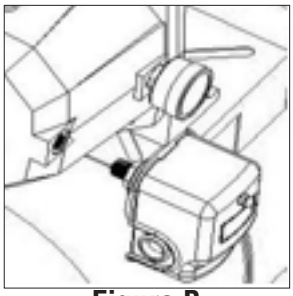


Figure B

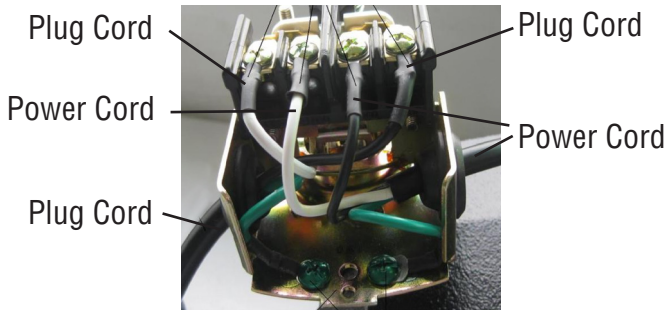


Figure C

REPLACING AN OLD PUMP

WARNING – HAZARDOUS VOLTAGE! Disconnect power to pump before working on pump or motor.

Step 1. Drain and remove the old pump. Check the old pipe for scale, lime, rust, etc., and replace it if necessary.
Step 2. Install the pump in the system. Make sure that all pipe joints in the suction pipe are air tight as well as water tight. If the suction pipe can suck air, the pump will not be able to pull water from the well.
Step 3. Adjust the pump mounting height so that the plumbing connections do not put a strain on the pump body. Support the pipe so that the pump body does not take the weight of piping or fittings.

INSTALLATION—MODEL XDPM196A3

WARNING – HAZARDOUS VOLTAGE!
Disconnect power to pump before working on pump or motor.

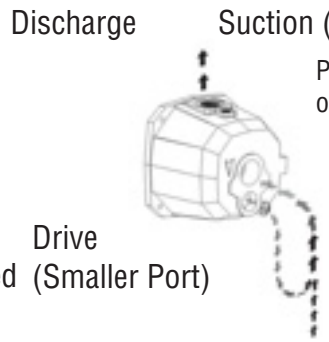
Step 1. Drain and remove the old pump. Check the old pipe for scale, lime, rust, etc., and replace it if necessary.
Step 2. Install the ejector kit. Follow the instructions provided with the kit. Be sure to align the venturi with the top hole on the front of the pump (see Figure 3).

NOTICE: Always replace the ejector when replacing the pump in a shallow well installation.

Step 3. Install the pump and faucet in the system. Make sure that all pipe joints in the suction pipe are air-tight as well as water tight. If the suction pipe can suck air, the pump will not be able to pull water from the well.
Step 4. Adjust the pump mounting height so that the plumbing connections do not put a strain on the pump body. Support the pipe so that the pump body does not take the weight of piping or fittings.
Step 5. Run piping from elbow to the household piping. The discharge piping must be at least as large as the elbow.

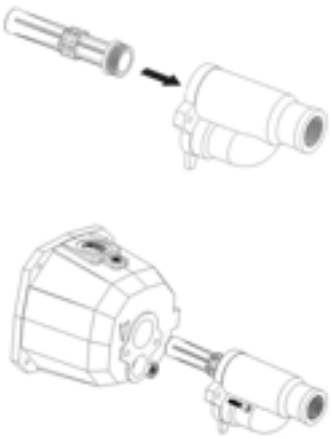
You have just completed the well plumbing for your new jet pump system.

Figure 3: Drive and Suction Functions



Drive Pipe - sends water down the well to drive water up through the Suction Pipe to Pump Suction

Figure 4: Mount Ejector



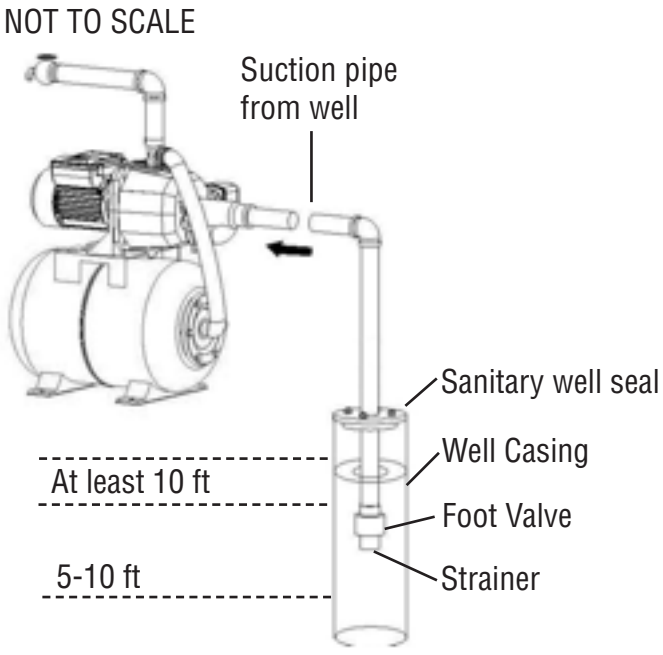
INSTALLATION— MODEL XDPM196A3

Step 1. Remove the control valve from the pump body. Replace it with a 1" NPT close nipple, a 1"x1" NPT elbow, and (see Figure 1).
Step 2. Install the ejector kit. Follow the instructions provided with the kit. Align the venturi with the top hole on the front of the pump (see Figure 6).

CASED WELL INSTALLATION, 2" OR LARGER CASING (FIGURE 5)

Step 3. Mount the pump as close to the well as possible. Connect the pipe from the well to the pump suctior port, using the fewest possible fittings – especially elbows – as fittings increase friction in the pipe.
Step 4. Assemble the foot valve, strainer, and well pipe (see Figure 5). Make sure that the foot valve works freely.
Step 5. Lower the pipe into the well until the strainer is 5 feet above the bottom of the well. It should also be at least 10 feet below the well's water level while the pump is running in order to prevent the pump from sucking air. Install a sanitary well seal.

Figure 5: Cased Well Installation



NOT TO SCALE

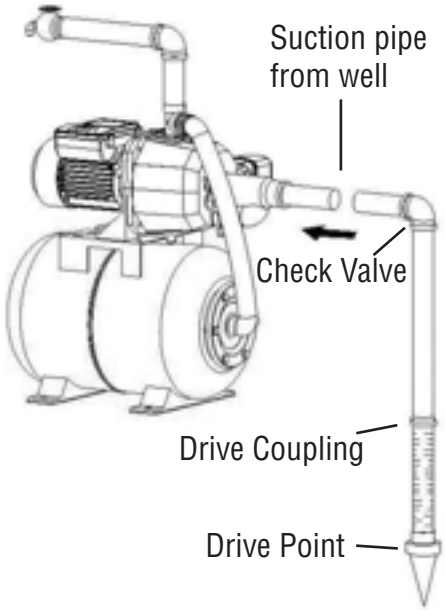


Figure 6: Driven Point Installation

DRIVEN POINT INSTALLATION (FIGURE 6)

Step 3. Drive the well, using “drive couplings” and a “drive cap”. “Drive fittings” are threaded all the way through and allow the pipe ends to butt against each other so that the driving force of the maul is carried by the pipe and not by the threads. The ordinary fittings found in hardware stores are not threaded all the way through the fitting and can collapse under impact. “Drive fittings” are also smoother than standard plumbing fittings, making ground penetration easier.

Step 4. Mount the pump as close to the wall as possible.

Step 5. If one well point does not supply enough water, consider connecting two or three well points to one suction pipe.

ALL PUMP INSTALLATIONS

Step 6. Install elbows, and suction pipe to the pump (see Figures 5 and 6). Connect the pipe from the well to the pump suction port, using the fewest possible fittings – especially elbows – as fittings increase friction in the pipe.

- The suction pipe should be at least as large as the suction port on the pump (include a check valve – see Figures 5 and 6).
- Support the pipe so that there are no dips or sags in the pipe, so it doesn’t strain the pump body, and so that it slopes slightly upward from the well to the pump (high spots can cause air pockets which can air lock the pump).
- Seal the suction pipe joints with Teflon tape or pipe joint compound approved for use on PVC. Joints must be air and water tight. If the suction pipe can suck air, the pump cannot pull water from the well.

Step 7. Run piping from the elbow to the house- hold piping. The discharge piping must be at least as large as the elbow.

You have just completed the piping for your new jet pump system!

ELECTRICAL—ALL MODELS

CONNECTION PROCEDURE:

Step 1. Connect the ground wire first as shown in Page 4. The ground wire must be a solid copper wire at least as large as the power supply wires.

Step 2. There must be a solid metal connection between the pressure switch and the motor for motor grounding protection. If the pressure switch is not connected to the motor, connect the ground screw in the switch to the ground screw under the motor end cover. Use a solid copper wire at least as large as the power supply wires.

Step 3. Connect the ground wire to a

a) grounded lead in a service panel
b) a metal underground water pipe
c) metal well casing at least ten feet (3M) long
d) to a ground electrode provided by the power company or the hydro authority.

Step 4. Connect the power supply wires to the pressure switch as shown in Page 4.

You have just completed the wiring for your pump. Please go to startup preparations on page 7.

PREPARING TO START THE PUMP – ALL MODELS

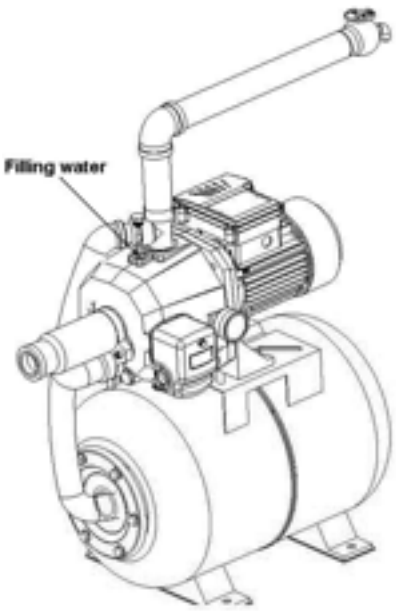


Figure 7: Fill Pump Through Filling Plug

Remove fill plug and fill pump and suction piping through priming tee

CAUTION: Never run a pump dry. Running pump without water may cause pump to overheat, damaging seal and possibly causing burns to persons handling pump. Fill pump with water before starting.

WARNING! Never run pump against closed discharge. To do so can boil water inside pump, causing hazardous pressure in unit, risk of explosion and possibly scalding persons handling pump.

Step 1. Remove the priming plug from the pump and fill the pump, fill all piping between the pump and the well, and make sure that all pip- ing in the well is full (see Figure 7).

Step 2. Replace all fill plugs.

Step 3. Power on! Start the pump. The pump should pump water in two or three minutes.

Step 4. If you don't have water after 2 or 3 minutes, stop the pump and remove the fill plugs. Refill the pump and piping. You may have to repeat this two or three times in order to get all the trapped air out of the piping.

Step 5. After the pump has built up pressure in the system and shut off, check the pressure switch operation by opening a faucet or two and running enough water out to bleed off pressure until the pump starts. The pump should start when pressure drops to 20 PSI and stop when pressure reaches 40 PSI. Run the pump through one or two complete cycles to verify correct operation. This will also help clean the system of dirt and scale dislodged during installation.

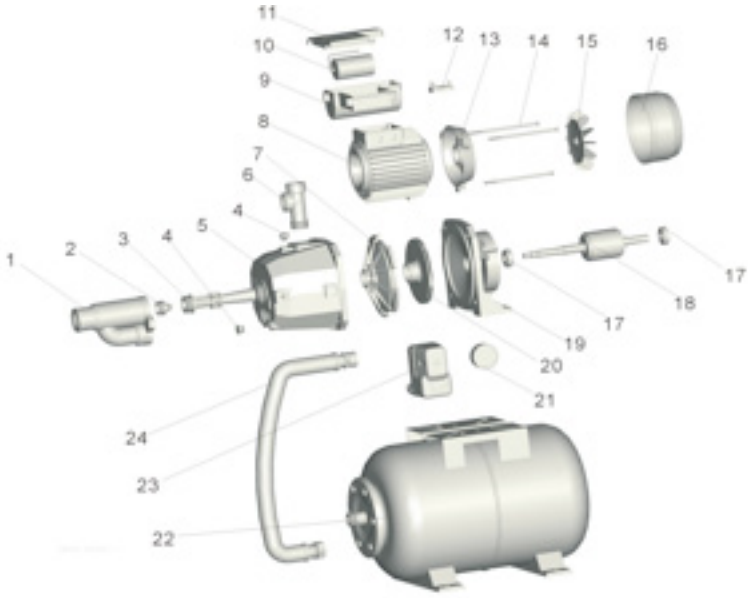
Congratulations on a successful installation. If you were unsuccessful, please refer to the Troubleshooting section (Pages 8& 9) or call 1-800-665-8685.

TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Motor will not run	1. Disconnect switch is off. 2. Fuse is blown or circuit breaker tripped. 3. Starting switch is defective 4. Wires at motor are loose, disconnected, or wired incorrectly. 5. Pressure switch contacts are dirty	1. Be sure switch is on. 2. Replace fuse or reset circuit breaker. 3. DISCONNECT POWER; Replace starting switch. 4. Refer to instructions on wiring, DISCONNECT POWER. 5. Check and tighten all wiring. **Capacitor voltage may be hazardous. To discharge capacitor, hold insulated handle screwdriver BY THE HANDLE and short capacitor terminals together. Do not touch metal screwdriver blade or capacitor terminals. If in doubt, consult a qualified electrician.** 6. DISCONNECT POWER and lightly file contacts with fine emery board or nail file.
Motor runs hot and overload kicks off	1. Motor is wired incorrectly 2. Voltage is too low 3. Pump cycles too frequently	1. Refer to instructions on wiring. 2. Check with power company. Install heavier wiring if wire size is too small (See Electrical / Wiring Chart). 3. See section below on too frequent cycling.
Motor runs but no water is delivered (Note: Stop pump; then check prime before looking for other causes. Unscrew priming plug and see if water is in priming hole).	1. Pump in new installation did not pick up prime through: a) Improper priming b) Air leaks c) Leaking foot valve or check valve 2. Pump has lost prime through: a) Air leaks b) Foot valve or strainer is plugged c) Ejector or impeller is plugged d) Check valve or foot valve is stuck shut e) Pipes are frozen f) Foot valve and/or strainer are buried in sand or mud	1. In new installation: a) Re-prime according to instructions. b) Check all connections on suction line, AVC, and ejector with soapy water or shaving cream. c) Replace foot valve or check valve. 2. In installation already in use: a) Check all connections on suction line and shaft seal. b) Clean foot valve or strainer. c) Clean ejector or impeller. d) Replace check valve or foot valve. e) Thaw pipes. Bury pipes below frost line. Heat pit or pump house. f) Raise foot valve and/or strainer above bottom of water source. Clean foot valve and strainer.
Pump does not deliver water to full capacity (Also check point 1c of previous row)	1. Water level in well is lower than estimated 2. Steel piping (if used) is corroded or limed, causing excess friction 3. Piping is too small in size	1. A new nozzle and venturi combination may be needed. 2. Replace with plastic pipe where possible, otherwise with new steel pipe. 3. Use larger piping.

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Pump delivers water but does not shut off or pump cycles too frequently	1. Pressure switch is out of adjustment or contacts are welded together 2. Faucets have been left open 3. Venturi, nozzle or impeller is clogged 4. Standard pressure tank is waterlogged and has no air cushion 5. Pipes leak 6. Foot valves leak 7. Pressure switch is out of adjustment 8. Air charge too low in pre-charged tank	1. DISCONNECT POWER; adjust or replace pressure switch. 2. Close faucets. 3. Clean venturi, nozzle or impeller. 4. Drain tank to air volume control port. Check AVC for defects. Check all connections for air leaks. 5. Check connections. 6. Replace foot valve. 7. Adjust or replace pressure switch. 8. DISCONNECT POWER and open faucets until all pressure is relieved. Using tire pressure gauge, check air pressure in tank at valve stem located on the tank. If less than pressure switch cut-in setting (20-40 PSI), pump air into tank from outside source until air pressure is 2 PSI less than cut-in setting of switch. Check air valve for leaks (use soapy solution) and replace core if necessary.
Air spurts from faucets	1. Pump is picking up prime 2. Leak in suction side of pump 3. Well is gaseous 4. Intermittent over-pumping of well. (Water drawn down below foot valve.)	1. When pump has picked up prime, it should pump solid water with no air. 2. Suction pipe is sucking air. Check joints for leaks with soapy water. 3. Consult factory about installing a sleeve in the well. 4. Lower foot valve if possible, otherwise restrict pump discharge.

REPAIR PARTS



Part no.	Description	Qty
1	Ejector	1
2	Nozzle	1
3	Adjutage	1
4	Filling plug	2
5	Pump body	1
6	Three-ways	1
7	Diffuser	1
8	Motor stator	1
9	Terminal box	1
10	Capacitor	1
11	Terminal cover	1
12	Terminal	1
13	End plate	1
14	Screw	3
15	Fan	1
16	Fan cover	1
17	Ball bearing	1
18	Rotor	1
19	Pump support	1
20	Impeller	1
21	Pressure guage	1
22	Tank	1
23	Pressure switch	1
24	Flexible Tube	1